



MV85

Oven Controlled Crystal Oscillator
10-30 MHz

Revised 1/1/15

Your dedicated source for crystal oscillators and filters.

Features

- Small Package: 25 x 25x12.7 mm (1"x1"x0.5")
- High Stability vs. Temperature: up to $\pm 5 \times 10^{-9}$
- Low Aging upto $\pm 3 \times 10^{-8}$ per year
- Low Phase Noise
- HCMOC and Sinewave Output
- 3.3V, 5V & 12V

Applications

- SatCom
- Test equipment
- Network clock
- Base station

Specifications

Temperature Stability Availability, Referenced to +25° C

Temperature Range	High	Higher	Comments
0 to +55° C	$< \pm 1 \times 10^{-7}$	$< \pm 5 \times 10^{-9}$	
-10 to +60° C	$< \pm 1 \times 10^{-7}$	$< \pm 5 \times 10^{-9}$	
-20 to +70° C	$< \pm 1 \times 10^{-7}$	$< \pm 1 \times 10^{-8}$	Contact factory for $< \pm 5 \times 10^{-9}$
-40 to +70° C	$< \pm 1 \times 10^{-7}$	$< \pm 1 \times 10^{-8}$	
-40 to +85° C	$< \pm 1 \times 10^{-7}$	$< \pm 2 \times 10^{-8}$	Contact factory for $< \pm 1 \times 10^{-8}$

Temperature ranges from -60° C to +85° C available. Contact factory and see ordering designations at the end of this data sheet.

Long Term Stability (Yearly Aging) Availability

Standard Frequencies	High	Higher	Comments
10.0 MHz	$< \pm 2 \times 10^{-7}$	$< \pm 3 \times 10^{-8}$	
12.8 MHz	$< \pm 2 \times 10^{-7}$	$< \pm 5 \times 10^{-8}$	Contact factory for $< \pm 3 \times 10^{-8}$
13.0 MHz	$< \pm 2 \times 10^{-7}$	$< \pm 5 \times 10^{-8}$	Contact factory for $< \pm 3 \times 10^{-8}$
16.384 MHz	$< \pm 2 \times 10^{-7}$	$< \pm 1 \times 10^{-7}$	Contact factory for $< \pm 5 \times 10^{-8}$
20.0 MHz	$< \pm 2 \times 10^{-7}$	C	Contact factory for $< \pm 1 \times 10^{-7}$
25.0 MHz	$< \pm 2 \times 10^{-7}$	C	Contact factory for $< \pm 1 \times 10^{-7}$
30.0 MHz	$< \pm 2 \times 10^{-7}$	C	Contact factory for $< \pm 1 \times 10^{-7}$

See ordering designations at the end of this data sheet.

Short Term, Pulling & Pushing Stability

Specification	Standard	Option	Comments
Short term stability per 1 sec. (Allen deviation)	*	*	*See chart on next page
Stability vs. Load ($\pm 10\%$)	$< \pm 5 \times 10^{-9}$	-	
Stability vs. power supply ($\pm 5\%$)	$< \pm 5 \times 10^{-9}$	-	
Warm-up time to w/ in $< \pm 1 \times 10^{-7}$	<2 minutes	-	@25° C

Specifications-Continued

Phase Noise, 12V, Sinewave (dBc/Hz)							
Frequency	HCMOS				Sinewave		
	10-13	>13-16	>16-20	>20-30	10-16	>16-20	>20-20
1 Hz	< -90	< -80	< -75	< -70	< -90	< -75	< -70
10 Hz	< -120	< -105	< -100	< -95	< -120	< -105	< -100
100 Hz	< -140	< -130	< -130	< -130	< -140	< -135	< -135
1 kHz*	< -145	< -145	< -145	< -145	< -150	< -150	< -150
10 kHz*	< -150	< -150	< -150	< -150	< -155	< -155	< -155
Short term stability per 1 sec. Allen deviation (# x10 ⁻¹¹)	0.5	1	2	3	1	2	3

* Contact factory for 3.3V. See ordering designations at the end of this data sheet.

Output Parameters			
Output	HCMOS		Sinewave
Level	"0"	< 0.5V	> 225 mV
	"1"	> 4.0V	-
Load	10K Ohms, 15 pF		50 Ohms ± 10%
Rise/Fall Time	-		-
Harmonics			> -30 dBc

Contact factory for Rise/Fall time or lower harmonics.

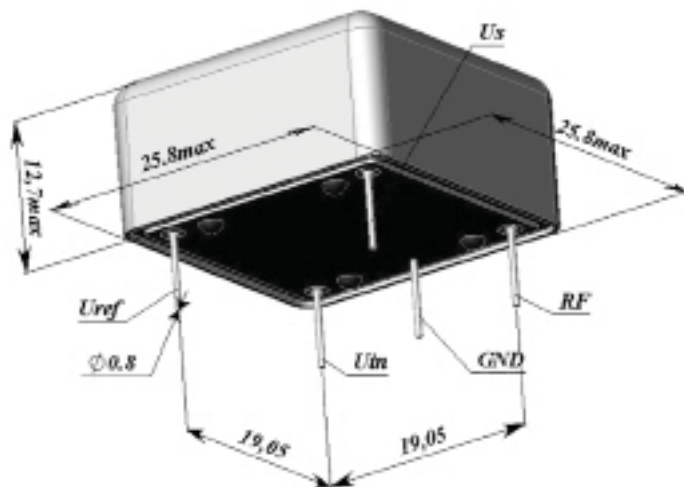
Power Supply & Voltage Control Parameters			
Specification	3.3V ±5%	5V ±5%	12V ±5%
Steady state current @ 25 ^o C	< 450 mA	< 200 mA	< 80 mA
Peak warm-up current	< 1000 mA	< 600 mA	< 300 mA
Frequency Adjust range	<±5x10 ⁻⁷	<±5x10 ⁻⁷	<±5x10 ⁻⁷
Frequency Adjust Voltage (Uin)	0 to +3.0V	0 to +4.5V	0 to +5V
Slope	Positive	Positive	Positive
or with Potentiometer	20 kOhm	20 kOhm	20 kOhm
Reference Voltage (Uref)	+3V	+4.5V	+5V

See ordering designations at the end of this data sheet.

Environmental Parameters	
Specification	Conditions
Vibration Frequency	10-500 Hz
Vibration Acceleration	10 gs
Shock Acceleration	100 gs
Shock Duration	3±1 mS
Humidity	98%
Storage Temperature	-55 to +80 ^o C
RoHs	Option

Contact factory for extended environmental conditions.

Outline Drawing



Pin	Value
Uref	Reference Voltage
Us	Power Supply
RF	RF Out
GND	Ground
Uin	Frequency Adjustment Voltage

Ordering Guide

Power Supply
12V
5V

Output
Sinewave
HCMOS

MV85 - B 20 G - 5V - SIN - 5.0 MHz - LN

Availability of certain stability vs. operating temperature range.		$\pm 1 \times 10^{-7}$	$\pm 5 \times 10^{-8}$	$\pm 3 \times 10^{-8}$	$\pm 2 \times 10^{-8}$	$\pm 1 \times 10^{-8}$	$\pm 5 \times 10^{-9}$
		100	50	30	20	10	5
A	0 to +55° C	A	A	A	A	A	A
B	-10 to +60° C	A	A	A	A	A	A
C	-20 to +70° C	A	A	A	A	A	C
D	-40 to +70° C	A	A	A	A	A	N
EX	-40 to +85° C	A	A	A	A	C	N

A=Available, C=Contact factory, N=Not available

Availability of certain aging values for certain frequencies.		Standard Frequencies					
		10.0 MHz	12.8 MHz	13.0 MHz	16.384 MHz	20.0 MHz	20.0 MHz
H	$\pm 2 \times 10^{-7}$ /year	A	A	A	A	A	A
G	$\pm 1 \times 10^{-7}$ /year	A	A	A	A	C	C
F	$\pm 5 \times 10^{-8}$ /year	A	A	A	C	N	N
E	$\pm 3 \times 10^{-8}$ /year	A	C	C	N	N	N

A=Available, C=Contact factory, N=Not available

Phase Noise, 10-13 MHz, Sinewave (dBc/Hz)			
Frequency Offset	-	LN	ULN (Preliminary)
1 Hz	< -85	< -95	< -95
10 Hz	< -115	< -120	< -125
100 Hz	< -140	< -140	< -145
1 kHz*	< -150	< -150	< -159
10 kHz*	< -155	< -155	< -155

* Contact factory for 3.3 Volt

Additional Notes:

- 1) Contact factory for daily aging values. General rule: $x10^{-x}$ /year = $x10^{-(x+2)}$ /day.
- 2) Advise RoHs requirement at Order.
- 3) Contact factory for non-standard temperature ranges.